

CURRENTLY PENDING CLAIMS

Claims 1-29 (Canceled)

30. (Currently amended) A machine readable storage medium comprising a program containing a set of instructions for causing a cell screening system to execute procedures for detecting the distribution of one or more cellular macromolecule of interest between a cell cytoplasm and a plasma membrane in individual cells comprising:

- a) scanning multiple cells in an array of locations which contain multiple cells to obtain fluorescent signals from fluorescent reporter molecules in the cells, wherein the cells possess a plurality of fluorescent reporter molecules, wherein the plurality of fluorescent reporter molecules comprises one or more fluorescent reporter molecules to report on
 - (i) one or more cellular macromolecule of interest;
 - (ii) the cell cytoplasm and
 - (iii) the plasma membrane;
- b) identifying individual cells from the fluorescent signals from the plurality of fluorescent reporter molecules;
- c) creating a plasma membrane mask and a cell cytoplasm mask in the individual cells from the fluorescent signals from the plurality of fluorescent reporter molecules;
- d) determining an intensity of the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest within the plasma membrane mask and the cell cytoplasm mask in the individual cells in response to contacting the cells with a test stimulus;
- e) determining a translocation quotient between the cell cytoplasm and the plasma membrane for the cellular macromolecule of interest by calculating a ratio of the intensity of the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest within the plasma membrane mask and the intensity of the fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest within the cell cytoplasm mask in the individual cells in response to contacting the cells at a first time point with a test stimulus;
- (f) comparing the translocation quotient determined in step (e) to:

i) one or more translocation quotients for the cellular macromolecule of interest between the cell cytoplasm and the plasma membrane, which are determined by calculating a ratio of an intensity of fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest within the plasma membrane mask and an intensity of fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest within the cell cytoplasm mask **(A)** in the individual cells in response to contacting the cells with the test stimulus from at least a second time point; **and (B) in individual cells that have not been contacted with the test stimulus**; [~~and~~/]or

ii) one or more translocation quotients for the cellular macromolecule of interest between the cell cytoplasm and the plasma membrane, which are determined by calculating a ratio of an intensity of fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest within the plasma membrane mask and an intensity of fluorescent signals from the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest within the cell cytoplasm mask in the individual cells that have not been contacted with the test stimulus; and

g) determining the effect of the test stimulus on the distribution of the one or more cellular macromolecule of interest between the plasma membrane and the cell cytoplasm in the individual cells as a function of the translocation quotient determined in step (e), and the one or more translocation quotients determined in step (f)(i)**(A) and (B)**, [~~and~~/]or step (f)(ii).

Claims 31-43 (Canceled)

44. (Previously presented) The machine readable storage medium of claim 30, wherein the identifying of the individual cells comprises identifying the nucleus of the individual cells.

45-60. (Canceled)

61. (Previously presented) The machine readable storage medium of claim 30, wherein the cellular macromolecule of interest is a protein.

62. (Previously presented) The machine readable storage medium of claim 30, wherein the fluorescent reporter molecules that report on the one or more cellular macromolecule of interest comprises a fluorescently labeled antibody.

63. (Previously presented) The machine readable storage medium of claim 30, wherein the multiple cells are fixed cells.

64. (Previously presented) The machine readable storage medium of claim 30, wherein the translocation quotient determined in step (e) is compared to the one or more translocation quotients determined in step (f)(i).

65. (Previously presented) The machine readable storage medium of claim 64, wherein the multiple cells are live cells.

66. (Previously presented) The machine readable storage medium of claim 30 wherein the translocation quotient determined in step (e) is compared to the one or more translocation quotients determined in step (f)(ii).